

DETAILED ACTION

Claim Objections

1. Claim 1 objected to because of the following informalities: "the control signal" lacks antecedent basis. Appropriate correction is required.
2. Claims 6, 7 and 14-20 are objected to because of the following informalities: "with lift system" is improper, it is possible applicant intended the phrase to read "with a lift system". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 5, 6, 9-11 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 40 01 495 – Wildner in view of US 6,230,817 - Haugen.

Regarding claim 1, Wildner teaches:

A device for improving the following of the surface undulations of an agricultural implement coupled to a tractor on a three-point lift system which comprises, in the bottom portion, two arms articulated on a shaft connected to the tractor for the coupling of two lateral bottom points of the implement, and in the top portion a third point link element between the tractor and the implement, the arms being controlled by lifting means and the third point link element having an effective

length which may vary, the device comprising a means responsive to the angular position of at least one arm, provided to act on the position of at least one of the three implement coupling points relative to the tractor, and a means responsive to the length of the third point link element, the assembly being suitable for providing an aggregate signal which serves to control the lifting means (as defined by applicant in Page 1 - lines 5-23 of applicant's specification) Wildner lacks wherein the position sensors are transducers, an electric circuit and a comparator connected to the transducers and the comparator delivering a control signal.

Haugen teaches the use of transducers (100A, 100B – Col. 5 – lines 17-18) to sense the position of the links either by the linear actuator or the angular position (Col. 5 - lines 23-26), a comparator (104 – hitch control unit considered a comparator), an electric circuit (Col. 5 - line 61) and a control signal (Col. 6 - line 1).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wildner to include transducers as the sensors on the upper and lower link elements of Wildner, a comparator, an electric circuit and a control signal as Haugen has it to be well known in the art to use transducers as the sensing means as well as a comparator, an electric circuit and a control signal on a hitch control device.

Regarding claim 2, Wildner in view of Haugen further teaches:

Wherein the transducers are in parallel configuration (Haugen - Fig. 2 - 106A, 106B shown in parallel configuration to one another to attach to the comparator).

Regarding claim 5, Haugen further teaches:

A terminal of the comparator for entering a set-point value via manual command by an operator (terminal attached to 102) capable of being set in response to wheel-slip.

Regarding claims 6, 13 and 16,

Wildner further lacks wherein the arms can oscillate relative to one another and a transducer attached to each arm.

Haugen further teaches arms that can oscillate relative to one another (Col. 4 – lines 24-26) and a transducer attached to each arm (Col. 5 – lines 29-31).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wildner to include wherein each lower link can oscillate relative then other and a transducer associated therewith as Haugen has taught it to be well known in the art to permit oscillation between the lower links and provide a transducer with each arm.

Regarding claim 9, Wildner in view of Haugen further teaches:

Wherein the transducers are potentiometric sensors (Haugen - Col. 5 – line 31)– fitted with three output contact plugs corresponding to two extreme points of a resistor and a cursor (these elements are standard of a potentiometer and inherently present).

Regarding claims 10 and 11, Wildner in view of Haugen does not explicitly recite connectors connected to the contact plug, cables connected to the circuit, or an output contact plug, however the examiner takes official notice that it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide the electrical circuit with cables, connectors and necessary output contact plugs for attaching any implements thereto as these are common elements of electrical circuitry.

5. Claims 3, 4, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wildner in view of Haugen as applied to claim 1 above, and further in view of US 4,809,785 – Arnold et al.

Regarding claim 3, Wildner in view of Haugen lacks the mixer circuit.

Arnold teaches a mixer circuit (37) with various signal inputs.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wildner in view of Haugen to include a mixer circuit and the sensors connected thereto as Arnold has taught it old and well known in the art to provide a mixer circuit on a hitch device.

Regarding claim 4, Arnold further teaches a means of adjustment (27) of the mixer circuit.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to further modify Wildner in view of Haugen as seen in claim 3 to include the mixer control element providing a means of adjustment of the mixer circuit as Arnold has taught it old and well known in the art to provide a mixer control element with a mixer control circuit.

Regarding claims 14 and 15,

Haugen further teaches arms that can oscillate relative to one another (Col. 4 – lines 24-26) and a transducer attached to each arm (Col. 5 – lines 29-31).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to further modify Wildner in view of Haugen in view of Arnold to include wherein each lower link can oscillate relative then other and a transducer associated therewith as Haugen has taught it to be well known in the art to permit oscillation between the lower links and provide a transducer with each arm.

6. Claims 7, 8, 12, 17 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Wildner in view of Haugen as applied to claims 1, 2 and 5 above, and further in view of US 5,810,096 - Defrancq.

Regarding claims 7, 17 and 20, Wildner in view of Haugen lack the intermediate frame, the two third point cylinders and the transducers attached to the cylinders. Defrancq teaches an intermediate frame (40) and two third point cylinders (18a, 18b).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wildner in view of Haugen to include an intermediate frame and two third point cylinders as Defrancq has taught it to be old and well known in the art to attach an intermediate frame with two third point cylinders on a hitch device. Further, it would have been obvious to include transducers with each cylinder in a manner taught by Wildner in view of Haugen on present hitch cylinders/links.

Regarding claim 8, Wildner in view of Haugen lacks the wheel-slip control device. Defrancq teaches the wheel slip control device as claimed (Page 1: lines 34 – Page 2 – line 9 of applicant's specification in description of FR-A-2 722 941 which is a priority document to US 5,810,096).

It would have been obvious to a person of ordinary skill in the art to modify Wildner in view of Haugen to include the wheel slip control device as claimed as Defrancq has taught it to be old and well known in the art to provide a wheel slip control device on a hitch apparatus.

Regarding claim 12, Wildner in view of Haugen in view of Defrancq teaches wherein the transducers are in parallel configuration (Haugen - Fig. 2 - 106A, 106B shown in parallel configuration to one another to attach to the comparator). Wildner in view of Haugen in view of Defrancq does not explicitly recite connectors associated with the transducers and connected to contact plugs, however the examiner takes official notice that it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide the electrical circuit with connectors and necessary contact plugs for attaching any implements thereto as these are common elements of electrical circuitry.

7. Claims 18 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Wildner in view of Haugen in view of Arnold as applied to claims 3 and 4 above, and further in view of Defrancq.

Regarding claims 18 and 19, Wildner in view of Haugen in view of Arnold lack the intermediate frame, the two third point cylinders and the transducers attached to the cylinders.

Defrancq teaches an intermediate frame (40) and two third point cylinders (18a, 18b).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wildner in view of Haugen to include an intermediate frame and two third point cylinders as Defrancq has taught it to be old and well known in the art to attach an intermediate frame with two third point cylinders on

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a hitch device. Further, it would have been obvious to include transducers with each cylinder in a manner taught by Wildner in view of Haugen on present hitch cylinders/links.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW D. TROUTMAN whose telephone number is (571)270-3654. The examiner can normally be reached on Monday through Friday 7:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Will can be reached on (571) 272-6998. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Thomas B Will/
Supervisory Patent Examiner
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/M.D.T./